How conservative should nomenclature be? Comments on the principle of priority

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Abstract. Recent attempts to circumvent the principle of priority and conserve names on the basis of usage pose innumerable problems. The rationale and objectives behind almost all such attempts and alternative proposals do not really stabilise nomenclature *per se*, but make it even more subjective and are potentially even more contentious than the rules they are meant to replace or correct. Subjective judgemental approaches to usage, obscurity of a publication, quality of published work and professional competence are dangerous and counterproductive. The principle of priority as it stands, applied judiciously with Article 79 of the Code, remains the best solution to the problems associated with pre-Commission nomenclature.

There has been a series of applications in recent years to set aside the principle of priority in favour of names purportedly better known and widely used. A number of interesting ideas and suggestions have sprung up, including establishing a category of 'Protected Works' (Cornelius, 1987). Several important points in this debate, however, have been played down or ignored. One of these is whether the nomenclatural problems associated with a species are on a par with problems concerning genera and families. Other contentions include whether the principle of priority itself is at fault, and what constitutes a 'legal' publication and name.

Part of the debate involves the conservation of well known generic names. Article 79 of the *International Code of Zoological Nomenclature* allows the Commission to set aside the principle of priority if an applicant to the Commission can show that the junior name is better known and more widely used and that its conservation would promote 'stability'. It is always a difficult decision because the degree of usage is often very subjective. Yet several aspects seem to have been ignored. A genus is a far more subjective taxonomic grouping than a species. In a continuing and improving taxonomy, new subgenera or genera are often established to accommodate older species once classified in broader genera. An example would be the commercially important Asiatic softshell turtle *Trionyx sinensis*, on which there is a great deal of scientific literature. Recent revisions, however, redefine *Trionyx* by restricting it to an African species, and the species known as *sinensis* is referred to *Pelodiscus*. Similarly, the well known fish *Tilapia mossambica* has been generically transferred twice, and is now placed in *Oreochromis*. If the generic placement of a species can change (and indeed it must change when the bulk of the evidence requires it) then the whole exercise of quibbling over whether a junior generic name is better known or widely used, and whether the senior synonym should be suppressed, is quite pointless. Even if a 'well known' junior synonym is conserved, there is nothing to prevent some of its constituent species from being transferred to other genera anyway. It is fallacious to assume that a 'well known' genus will always include the 'well known' species. Many well known genera have very obscure and poorly known type species. Biologists must accept the reality that in the interest of a better understanding supraspecific categories may have to change.

In any preliminary study, the key words used in a search for the relevant literature always include the known synonyms. It is mandatory for scientists to keep up with the often voluminous literature, including the Opinions (rulings) of the Commission. To correct an often erroneous notion — the proceedings of the Commission are the concern of *all* biologists, not just taxonomists or ecologists.

The principle of priority is a very effective way to ensure stability. The danger today lies in the fact that a great many applications of this principle can be challenged. This certainly is the case for fishes, on account of the popularity of aquaria. A professional taxonomist who exercises the principle of priority in his revision has to wait a few (or many) years to see if someone might put in an application against his action. If this occurs, then he awaits the comments of his peers and the decision of the Commission. It will take many years before it is known whether his following of the rules has been worthwhile. Meanwhile, a veritable nightmare of confusion can occur, and the taxonomic sciences face even more criticism for being 'indecisive' and 'irrelevant'. A taxonomist may simply send in an application just to force an outcome to ensure stability. The amount of extra work for the Commission will increase out of hand.

The Code was conceived to help zoologists, without expert assistance, decide what is the correct name for a taxon. The Code also serves to provide guidelines for taxonomists to ensure that new taxa are properly described and identifiable by future workers. In the interests of long term stability, the principles and wording have been structured so as to minimise subjectivity and confusion. But the fact remains that the Code was only formulated some 150 years after Linnaeus's system of classification was adopted, and that in this period a great many problems had been generated. Nomenclatural practice and the Commission have been unjustly vilified for doing zoology a disservice by allowing names of well known animals to change because of 'silly' rules and 'inflexibility'. The complaints, more often than not, have come from people who are either not familiar with the objectives of the Code or do not realise that the Commission has to deal with long term scientific interests and nomenclatural stability — not merely the idiosyncrasies, conveniences and preferences of individual persons or groups.

There is also a world of difference between a taxon and a name. A nominal genus, i.e. a taxonomic genus and its name, is objectively defined by a single type species. In turn, the type species and its name are objectively defined by (in principle) a single type specimen. The Code deals only with how the name was originally defined, nothing more. How broad a genus is, what species it includes, the infrageneric variability, popularity of use, phylogenetic origins, etc. are matters outside the jurisdiction of the Commission. They are subjective aspects. The Commission, however, is required to consider these matters when deciding on cases. Decisions by the Commission are designed and intended to be as objective as possible. The situation is not perfect, but is the best as yet available. Thus far, there are no viable or workable alternatives to many of the guidelines or rules in the Code.

I am not in agreement with any notion of designating 'Protected Works'. One man's good taxonomy may well be regarded as bad by another. A taxonomist may produce a beautiful tome with numerous easily used colour illustrations and excellent keys, but he may not have bothered to undertake a comprehensive revision. He may simply have compiled others' works and elaborated on them. A more serious problem arises when only part of the work is regarded as 'good'. To 'protect' 70 or 80%, say, of a work is hardly satisfactory, this exercise being even more subjective. And what if a name in a protected work is shown to be a junior homonym? Should this name be conserved even if its senior homonym is equally well known? And how well known and popular should a name be before it is regarded as 'well known'? By voting perhaps? And who should be allowed to vote? Everyone? And what if two protected works happen to contradict one another? Frost's (1990) comment on committees and appraisal times being set up by the Commission to vet 'Protected Works' is one possible means of salvaging the concept, but I am not convinced that it will reduce the amount of work which has to be done. On the contrary, I anticipate even more work for the committees and the Commission. If bad taxonomy ever becomes sacrosanct, we will all be the losers. The rules as they stand are the most neutral, most impartial and fairest aid to scientific studies. While one of taxonomy's main roles is to service the other biological sciences, it must not be forgotten that it is also a science in itself. As such, it must follow the same rules of allowing objective criticism and dissent.

The problems with species, the 'working units' of taxonomy, are more complicated than with genera. With species which have voluminous literature, following the principle of priority can undoubtedly pose problems. Unlike supraspecific taxa, the species is a generally more stable and objective unit, and a ruling by the Commission has a potentially more permanent effect. The problem lies essentially with subjective synonyms, and we are still grappling with the problems posed by 18th and 19th century taxonomy. Misidentifications and incorrect or non-existent types or type designations are key problems. Even in the absence of these, however, the limits of a species are also quite subjective, and a 'well known species' may well be shown to consist of two or more taxa once the correct characters are elucidated. Suppressing the principle of priority is not necessarily a foolproof solution. A junior synonym, which by a Commission ruling is conserved in place of a senior synonym, may be shown to refer to several species or subspecies, and the rejected senior synonym may well have to be 'exhumed'.

The suppression of senior names is acutely dangerous. In Opinion 846 (1968) the name *Mullus auriflamma* Forsskål, 1775 was suppressed by the Commission to conserve what was believed to be a junior synonym, *M. barberinus* Lacépède, 1802. Later it was shown that they were in fact two separate species, but as its name had been suppressed a new one had to be established for what had previously been called *M. auriflamma* — a terribly confusing and undesirable situation. Today the Commission often prefers to rule that a junior name merely has precedence over a senior synonym, rather than to suppress the senior name.

It has been argued that only in taxonomy is the work of an incompetent allowed to prevail over a good piece of work on the simple ground of priority (see Gould, 1990). The dissent here is legitimate, but an oversimplification. In many cases considered, the senior synonyms have been published in obscure publications, the descriptions often poorly composed and the illustrations, if any, too schematic to be useful. But while some 'incompetents' are easily recognised, the status of most is highly debatable. In practice, the question and debate about competence versus usefulness only arises in cases where the publications had been missed. In cases where a poorly-prepared publication is easily available and well known, it is merely accepted with disapproval. The criterion of obscurity is an even more subjective one. From an Asian viewpoint, most European publications are obscure, especially if they are in languages unfamiliar to the respective scientists. The problem is somewhat similar to that faced by European and American taxonomists who have to uncover and contend with 'obscure' papers written in Chinese, Malay, Thai or Japanese. If the Commission should ever be forced to judge the competence or obscurity of a publication, it will almost certainly disintegrate in the inevitable ensuing disagreement.

The current rules of nomenclature pertaining to priority are sufficiently flexible to allow for the names of 'indisputably well known' species to be conserved. I am a firm supporter of Article 79, which allows for this course of action, but I also believe that this provision should be used extremely sparingly. In the case of genera, in view of the more subjective nature of this taxonomic category, there is really no need to call upon Article 79 at all. For species, the Article should be invoked only if (a) there is an overall consensus as to the conspecificity of the specimens and taxa in question, and (b) the name is very widely used by many scientists. An example might be the recent application by Webb (BZN **47**: 122–123) regarding *Trionyx* (or *Pelodiscus*) *sinensis* Wiegmann. This name has 'fought off' one previous attempt to have a senior synonym supersede it, and the Commission should permit it to do so again.

Changing the principle of priority is not a solution to the current problems of nomenclature. The growth in the number of journals and bulletins, and the ease of desktop publishing, promise further problems for the future. The solution is a tightening of control as to what constitutes legitimate publication. All publications establishing new nominal taxa should in the future have a copy sent to an international body (the *Zoological Record* is a logical depository) in order for the names to be regarded as available. A period of grace (e.g. six or 12 months) between the date of publication and receipt by the *Zoological Record* would be allowed. The editors of journals should send papers describing new taxa to the co-odinating body, and the Commission should have a set of guidelines available upon request to all present and prospective editors. Alternatively, the authors themselves could send in their papers. It should be the editors' (or authors') responsibility to comply. To aid future studies, the whereabouts of all type material (especially holotypes) should also be stated clearly. If possible, at least some type material should be kept in an easily accessible institution.

The problems posed by the sometimes uncritical taxonomic practices of the last two centuries will have to be endured. Eventually, almost all 'obscure' publications will be weeded out, and the names will stabilise. For long there was no truly international governing or guiding body, but there is one now. It must be remembered that any attempt to 'clean house', correct large numbers of old errors, change things for the better (as taxonomists are increasingly doing today) incurs the risk of serious initial upsets and confusion. But this is a necessary evil if systematics and biology in general are to be improved.

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References

Cornelius, P.F.S. 1987. Use versus priority in zoological nomenclature: a solution for an old problem. *Bulletin of Zoological Nomenclature*, **44**(2): 79–85.

Frost, D. 1990. Comment on the adoption of 'Protected Works' for purposes of zoological nomenclature. *Bulletin of Zoological Nomenclature*, **47**(2): 124.

Gould, S.J. 1990. Bully for *Brontosaurus*. *Natural History*, February 1990, pp. 16–24. Reprinted *Bulletin of Zoological Nomenclature*, **47**(2): 88–96.